

DOCUMENT MODIFICATION REQUEST (DMR)

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Print or Type All Information (Except Signatures)

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5. Document Title Soil Vapor Extraction Construction Quality Control Plan	

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8. Item	9. Page	10. Step	11. Proposed Modifications
N/A	N/A	N/A	This document addresses the quality controls plans for construction of the soil vapor extraction system OU2

12. Justification (Reason for Modification, EJO #, TP # etc.)

This document is needed to address the quality control plans for this task

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R B HOFFMAN, CLASSIFICATION OFFICE
JUNE 11, 1991

If modification is for a new procedure or a revision list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15. If modification is for any type of change or a cancellation, organizations are listed in Block 13, then Concuror prints, and signs in Block 14, and dates in Block 15.

13. Organization	14. Print, Sign (if applicable)	15. Date (if applicable)
ES&E	N/A <u>Gary M Anderson</u>	13 JAN 94 MCB 2-4-94
RPM	N/A	MCB 2-4-94
EQS	N/A	10-21-93 MCB 2-4-94
Geosciences	N/A	MCB 2-4-94
FOM	N/A	MCB 2-4-94
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17. Assigned SME/Phone/Pager/Location Michael Klein/6950/7458/080	22. Accelerated Review? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	23. ORC Review ORC Review Not Required	01/11/94	01/11/94
24. Responsible Manager (print/sign/date) Tom Greengard/ <u>[Signature]</u> 10/21/93				

RF-47940 (5/93)

ADMIN RECORD

FEB 08 1994

complete
after corrections
Rec'd by ERM DCC Lme 2/8/94

REVIEWED FOR CLASSIFICATION / UCM

BY N/A
DATE N/A

(A) 1110 - 001 (U) 2

**OU2 SUBSURFACE IM/TRA CONSTRUCTION
QUALITY CONTROL PLAN**

Rocky Flats Plant

(Operable Unit No. 2)

U.S. DEPARTMENT OF ENERGY

**Rocky Flats Plant
Golden, Colorado**

January 1994

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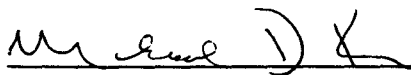
Effective Date

2/14/94 LMC

Organization

Environmental Science and Engineering

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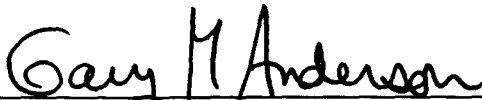


Project Manager
Environmental Restoration

01-20-94

Date

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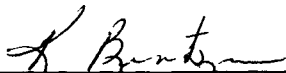


Department/Group Manager
Environmental Restoration

20 Jan 94

Date

APPROVED BY



Quality Assurance Program Manager
Environmental Restoration

1-20-94

Date

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1 0 INTRODUCTION

1 1 PURPOSE

The purpose of this document is to identify project quality control procedures, activities, and personnel for the installation and construction of the piping and electrical service for a government-furnished Soil Vapor Extraction (SVE) Pilot Unit at Operable Unit 2 (OU2) at the Rocky Flats Plant (RFP) in Golden, Colorado

1 2 PROJECT BACKGROUND

The Department of Energy (DOE) has issued a Subsurface Interim Measures/Interim Remedial Action (IM/IRA) Plan to investigate the volatile organic compound (VOC) contamination within OU2. The SVE technology will be pilot tested within, or adjacent to, suspected VOC source areas at the East Trenches, specifically Individual Hazardous Substance Site 110.

1 3 PROPOSED WORK

For the alluvium, one extraction well, one injection well, and three pressure monitors will be drilled and constructed. For the bedrock, one extraction well, one injection well, and two pressure monitors will be drilled and constructed in the sandstone formation. A 6-inch-thick site pad of 3/4-inch diameter washed crushed rock will be constructed. Process equipment, including two groundwater pumps, two 10,000-gallon groundwater storage tanks, piping, and the SVE pilot unit, will be installed for the pilot test. Associated electrical work, instrumentation, and a leak detection system will also be installed. This work is described in the OU2 IM/IRA Subsurface Work Plan (EG&G 1993a) and Final Implementation and Operation Plan for the SVE Pilot Test (EG&G 1993b).

Woodward-Clyde (W-C) will oversee the installation of wells by a drilling subcontractor. Installation of facility piping, pumps, instrumentation, site pad, and groundwater storage tanks will be conducted by W-C. The installation of the electrical work will be conducted by a subcontractor with oversight by W-C. The installation of helical anchors associated with the SVE pilot unit and the groundwater storage tanks will be conducted by a subcontractor with oversight by W-C.

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When the construction of the project is complete, EG&G representatives will conduct a survey of the facility. With information from this survey, W-C will prepare as-built drawings of the facility.

1 4 CONTENTS

This Construction Quality Control Plan is organized into four sections including Section 1 0, Introduction. Section 2 0 describes the project organization and responsibilities of key members of the project team. Quality control procedures are discussed in Section 3 0, and the quality control activities are described in Section 4 0.

2 0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section presents the project organization and responsibilities with respect to construction quality control

2 1 PROJECT ORGANIZATION

Key personnel of quality control activities are

W-C Project Manager - Dean Parson

Soil Vapor Extraction Project Engineer - Barry O'Melia

Site Manager - Michael May

Installation Supervisor - Bill Fronczak

Drilling Supervisor and Rig Geologist - Dave Nicholson

2 2 RESPONSIBILITIES OF QUALITY CONTROL PERSONNEL

Project Manager - The Project Manager has overall responsibility for quality assurance and quality control on the project. He will coordinate with EG&G personnel and field and technical staff to evaluate whether the work meets the requirements of the project specifications and work plans.

Soil Vapor Extraction Project Engineer - The Project Engineer will supervise and evaluate the performance of the pilot test. He oversees technical performance of the project and acts as technical liaison.

Site Manager - The Site Manager will be responsible for coordination and supervision of field staff and subcontractors. He will coordinate with the project manager and engineer, maintain records, monitor progress, and serve as a liaison with EG&G personnel.

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Installation Supervisor - The Installation Supervisor will be responsible for quality control and installation of equipment associated with the pilot unit. He will supervise the installation of the piping, process equipment, and mobile unit.

Drilling Supervisor and Rig Geologist - The Drilling Supervisor will be responsible for coordinating and supervising the field staff in the drilling phase of the project. The Drilling Supervisor has responsibility for overseeing quality control and implementation for the installation of the extraction wells, the injection wells, and pressure monitors in accordance with the EG&G Soil Vapor Extraction Pilot Test, Subsurface Work Plan. He will coordinate with subcontractors, the Project Manager, Project Engineer, and the Installation Supervisor. He will maintain records and monitor progress of the drilling activities.

3 0 QUALITY CONTROL PROCEDURES

3 1 GENERAL

Procedures will be performed in accordance with the OU2 IM/IRA Subsurface Work Plan (EG&G 1993a), Final Implementation and Operation Plan including the Specifications Appendix (EG&G 1993b), and the applicable EG&G Standard Operating Procedures (SOPs) as referenced in the project work plans

3 2 MATERIAL HANDLING

The Site Supervisor or Installation Supervisor will request from the W-C Procurement Manager only the equipment which are in conformance with the OU2 IM/IRA Subsurface Work Plan (EG&G 1993a) and the Final Implementation and Operation Plan including the Specifications Appendix (EG&G 1993b) The W-C Project Manager or designee will approve material purchases The equipment or materials will be delivered to the site by the supplier and properly stored by W-C or used in off-site fabrication, unless specific deviations are approved by the W-C Project Manager and the EG&G Project Manager or his/her designee Verification/certification of material and equipment conformance with the specifications will be acquired from the manufacturer or supplier by W-C

3 3 CONSTRUCTION TASKS

Installation by W-C or other subcontractors shall be in accordance with the Specifications If manufacturer's installation instructions are used, a copy of the instructions will be obtained for the construction quality control documentation

3 4 SCHEDULE AND CONTROL

In coordination with the Installation Supervisor, the Project Manager will be responsible for setting and monitoring the construction schedule The sequence of equipment and material installation is shown in Table 3-1 Construction QC hold points are also listed in Table 3-1 The sequence of installation can vary, with the exception of the items for which a hold point is listed Prior to construction of these items, construction QC testing of the hold point item must be completed

TABLE 3-1
CONSTRUCTION SEQUENCE AND QUALITY CONTROL HOLD POINTS

Sequence	Construction Item	Construction QC Hold Point
1	Extraction Vents and Wells	
2	Site Pad	Prior to Steps 9 and 10, measurement of the Site Pad will be completed
3	Submersible Pumps	
4	3/4" and 1" Groundwater Extraction Pipe and Fittings	Prior to Step 5, testing of the 3/4" and 1" Groundwater Extraction Pipe must be completed
5	3" Groundwater Extraction Double Containment Pipe and Fittings	Prior to Step 16, testing of 3" Groundwater Extraction Line Double Containment will be completed
6	4" Air Injection Pipe and Fittings	
7	6" Vapor Extraction Pipe and Fittings	
8	Trailer and Tank Helical Anchors	Prior to Steps 9 and 10, testing of Helical Anchors will be completed
9	Groundwater Storage Tanks	
10	SVE Pilot Unit	
11	Diesel Generator Berm	
12	Diesel Generator	
13	Immersion Heater	
14	Granular Activated Carbon Canisters	
15	Electrical Systems	Prior to Step 16, Electrical Startup Testing will be completed
16	Leak Detection System	

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3 5 DEVIATIONS

All proposed deviations from the Final Implementation and Operation Plan including the Specifications Appendix (EG&G 1993b) and Subsurface Work (EG&G 1993a) will be submitted in writing for review by the W-C Project Manager and EG&G Project Manager. Deviations from project-controlling documentation will be documented via the scientific notebook system and/or through logbooks or data forms.

Any deviations from the quality control procedures will be approved by the W-C Project Manager and EG&G plant personnel prior to implementation.

3 6 DOCUMENTATION

Verification of project quality control will consist of a variety of documentation. To evaluate whether the materials and equipment used in construction conform with the requirements of the project work plans and specifications, documentation of material conformance will be required from the manufacturer or supplier. If installation is conducted in accordance with the manufacturer's installation instructions, these instructions will be included in the project documentation. In addition, if testing of work is conducted in accordance with the manufacturer's testing instructions, the instructions will be included in the project documentation. Testing results will be appropriately documented with the date, item undergoing testing, personnel attending, test criteria, comments, and the name and signature of the EG&G inspector or representative present.

Overall project conformance will be documented in Field Log Books by the Site Manager, Installation Supervisor, or Drilling Supervisor. Documentation of construction and field observations will be recorded in the Field Log Books with black waterproof ink. The Field Log Books should be waterproofed and have consecutively numbered pages. At the beginning of each entry, the date, time, weather conditions, and personnel present should be recorded. At the end of each entry, the person recording the observations will sign and date the entry.

Records of periodic inspections as discussed in Section 4 0 will also document overall construction compliance with the contract documents.

Table 3-2 presents the testing documentation required for each construction item. In addition to the documentation listed for each item, field log books will also document compliance of the construction.

3.7 CORRECTIVE ACTION PROCEDURES

Corrective action procedures will be implemented if the SVE systems, personnel, instructions, controls, tests, or documentation are not providing construction which conforms to the project work plans and specifications contract documents. Corrective actions may include:

- Rejecting work found to be deficient
- Requiring that the defective work be replaced or repaired, as applicable
- Replacing personnel involved with the work

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TABLE 3-2
CONSTRUCTION QUALITY CONTROL GUIDANCE AND DOCUMENTATION

CONSTRUCTION ITEM	GUIDANCE	REQUIRED TESTING	DOCUMENTATION	SOURCE
Extraction Vents and Wells	Subsurface Work Plan SOP GT 06 SOP GT 03	None	Material Conformance Inspection Records As-Built	Manufacturer W-C W-C
Submersible Pumps	Implementation and Operation Plan Section 2 5 Submersible Well Pump System Specification'	Field Operations Testing	Material Conformance Manuf Installation Instructions Testing Results Inspection Records	Manufacturer Manufacturer W-C W-C
3/4 and 1" Groundwater Extraction Pipe and Fittings	Implementation and Operation Plan Section 2 5 Drawing 103 Piping Insulation Specification' Piping Specification'	Hydrostatic Testing* at 50 PSIG for 2 hours	Material Conformance Manuf Installation Instructions Testing Results Pressure Gage Calibration/Certification Inspection Records As-Built	Manufacturer Manufacturer W-C W-C W-C
3 Groundwater Extraction Double Containment Pipe and Fittings	Implementation and Operation Plan Section 2 5 Drawing 103 Piping Insulation Specification' Piping Specification'	Pneumatic Testing* at 15 PSIG for 2 hours	Material Conformance Testing Results Pressure Gage Calibration/Certification Inspection Records As-Built	Manufacturer W-C W-C W-C W-C
4" Air Injection Pipe and Fittings	Implementation and Operation Plan Section 2 5 Drawing 101 Piping Specification'	Pneumatic Testing* at 15 PSIG for 2 hours	Material Conformance Testing Results Pressure Gage Calibration/Certification Inspection Records As-Built	Manufacturer W-C W-C W-C W-C
6 Vapor Extraction Pipe and Fittings	Implementation and Operation Plan Section 2 5 Drawing 101 Piping Specification'	Pneumatic Testing* at 15 PSIG for 2 hours	Material Conformance Testing Results Pressure Gage Calibration/Certification Inspection Records As-Built	Manufacturer W-C W-C W C W C
Site Pad	Implementation and Operation Plan Section 2 3	Field Measurement	Inspection Records	W-C
SVE Pilot Unit	Operations and Maintenance Manual Volume I, Operating Procedures Section 2 0 Section 3 0	Manufacturer Testing	Manuf or Fabricator Installation and Operation Instructions Manufacturer Testing Results Inspection Records	Manufacturer Manufacturer W-C
Trailer and Tank Helical Anchors	Operations and Maintenance Manual Volume I, Operating Procedures Section 2 0 Appendix F Drawing 802	Pull test	Manuf Installation Instructions Inspection Records As-built	Manufacturer W-C W-C W-C
Diesel Generator Berm	Implementation and Operation Plan Drawing 101	None	Inspection Records	W-C
Diesel Generator	Implementation and Operation Plan Drawing 101 Diesel Generator Specification	None	Material Conformance Manuf Installation Instructions or Operations Manual Inspection Records	Manufacturer Manufacturer W-C

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TABLE 3 2
CONSTRUCTION QUALITY CONTROL GUIDANCE AND DOCUMENTATION

CONSTRUCTION ITEM	GUIDANCE	REQUIRED TESTING	DOCUMENTATION	SOURCE
Groundwater Storage Tanks	Implementation and Operation Plan Drawing 101 Tankage Specification'	Field Leak Testing Manufacturer Testing	Material Conformance Manuf Installation Instructions Testing Results Inspection Records	Manufacturer Manufacturer W-C W-C
Immersion Heater	Implementation and Operation Plan Immersion Heater Specification'	Field Operation Testing	Material Conformance Inspection Records	Manufacturer W-C
Granular Activated Carbon Canisters	Implementation and Operation Plan Granular Activated Carbon Systems Specification' Drawing 101	None	Materials Conformance Manuf Installation Instructions Inspection Records	Manufacturer Manufacturer W-C
Leak Detection	Implementation and Operation Plan Section 2 6 Drawing 102 Electrical Specification'	None	Materials Conformance Manuf Installation Instructions Inspection Records	Manufacturer Manufacturer W-C
Electrical Systems	Implementation and Operation Plan Section 2 6 Drawing 102 Electrical Specification'	Field Systems Testing	Materials Conformance Inspection Records Testing Results	Manufacturer W-C W-C

' Specifications are located in Appendix A of the IM/IRA Implementation and Operation Plan

* Guidance for hydrostatic and pneumatic testing is found in EG&G RFP Standard SP 301 4/28/93

4 0 QUALITY CONTROL ACTIVITIES

4 1 INSPECTIONS

4 1 1 Initial Inspection

An initial inspection will be required to evaluate whether the materials and equipment meet the specifications and project work plans. The initial inspection will be performed as soon as possible after the delivery of equipment and material to the site and, in any event, prior to incorporation of material and equipment in the work. The inspections will be appropriately documented using Form CONSQA 1 (see Appendix A). The initial inspection will include a review of the project work plans to evaluate whether materials, equipment, and procedures conform to project requirements. This activity will include a check to evaluate whether provisions have been made to provide required control testing and whether all materials and equipment are properly stored to prevent damage from the elements and construction operations.

4 1 2 Construction Inspection

To evaluate whether the methods, techniques, and standards of workmanship comply with the project requirements, construction inspections will be performed. The inspections will be appropriately documented using Form CONSQA 1 (see Appendix A). The documentation will include information regarding the materials installation, testing, location, and corrective actions performed. The information will be collected for each construction item listed in Table 3-1 to evaluate whether the quality of construction, tolerances, and workmanship are in compliance with the specifications and project work plans. The names of personnel who participate in the construction inspections will be listed in the inspection documentation.

4 2 TESTING

Testing of materials and equipment in accordance with the specifications will be required to verify that the work conforms to the project requirements. The Project Manager in coordination with the Installation Supervisor will schedule testing and notify the EG&G Project Manager of the scheduled testing. Testing procedures and results will be documented in accordance with Section 3 6, Documentation, and 4 1 2, Construction Inspection. Test

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results not in conformance with the requirements of the specifications and work plans will be immediately brought to the attention of the Site Manager for resolution

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5 0 REFERENCES

EG&G 1993a Final Pilot Test Plan Soil Vapor Extraction Technology, Subsurface Interim Measures/Interim Remedial Action, East Trenches Area, Operable Unit No 2 January 12

EG&G 1993b Final OU2 IM/IRA Implementation and Operation Plan, Soil Vapor Extraction Pilot Test Rocky Flats Plant, Operable Unit No 2 September

OU2 SUBSURFACE IM/IRA CONSTRUCTION QC INSPECTION

- 1 Construction Item _____
(as listed in Table 3-1 of Construction QC Plan)
- 2 Names _____ Date _____
- 3 Required Documentation _____

Item	Does item conform to materials specified in operations and implementation plan? (Attach packing slip)	Were manufacturer's specifications followed during installation (if available)? (Attach specifications)	Were specifications in Implementation Plan followed (if available)? (List specification)	Did material/ equipment pass installation testing? (Attach documentation)	Did the material/ equipment list pass a visual field inspection? (Attach field notes)	Is the material/ equipment located as proposed in the Operations and Implementation Plan? (Attach As-built)	Corrective Actions/ Comments

- 4 Name and title of person approving form (please print) _____
- 5 Signature _____ Date _____